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Year: 2015

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Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-110452>

Journal Article

Published Version

Originally published at:

Napolitano, Christopher M; Freund, Alexandra M (2015). Backup plans as a motivational construct. The European Health Psychologist, 17(2):89-92.

# Backup plans as a motivational construct

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Imagine that you are a cardiologist consulting a patient about his high levels of cholesterol. First, you present the ideal treatment: changes in diet and exercise. However, you also offer a backup plan. "If diet and exercise don't reduce your cholesterol by your next visit," you say, "then I will prescribe statin medication."

In this example, medication represents a backup plan, which we define as an *alternative means to achieve an end that is developed, but not initially (or ever) used*. In many cases, having backup plans can be an effective approach for managing uncertainty. However, as the central premise of a new program of research that we are conducting at the University of Zurich, we posit that backup plans can change the way a person pursues a goal, even if they are not currently or even ever used. We expect that these changes occur as the result of decreased resource availability as well as changes in goal-related motivation. Returning to our example, the patient's diet change may be compromised if he knows that the prescription is forthcoming, he may "ease off" on his diet and exercise in the weeks leading to the follow-up appointment.

The central question of our research is: Do backup plans serve as a safety net supporting goal pursuit, or are they an expense that compromises goal striving? In other words: Do backup plans support or undermine self-regulation? Here, we begin by describing the theoretical underpinnings of our conceptualization of backup plans. We next describe current and future research projects that test the use and usefulness of backup plans. Finally, we conclude

by summarizing and providing an outlook for the role of backup plans in the study of aging and health.

## Introducing backup plans

What are backup plans and what are the processes that underlie their use? We consider backup plans to be equifinal (e.g., von Bertalanffy, 1968) means held back for potential later use to achieve ends. We posit that backup planning involves three processes: a person (1) develops a backup plan from the set of means that equifinally lead to a goal. These backup plans are then (2) reserved, or held back for potential later use. Finally, should a person's first-choice plan prove unsuitable, backup plans (3) replace Plan A. For example, an older adult has the goal of maintaining fitness. Her first-choice plan is hiking, but she develops swimming as a backup plan in case her knees become sore. She reserves the swimming backup plan and begins her hiking routine. Later, she replaces hiking with the swimming after knee discomfort.

## Contingent and redundant backup plans

People develop and reserve backup plans because they may later prove useful in goal pursuit. The potential utility of backup plans can be described in two different ways - *contingency* and *redundancy*. Contingent backup plans address specific anticipated losses resulting from or pertinent to the first-choice plan. In the above example, the older adult developed a contingent backup plan: anticipating that her knees

may ache, she reserves the backup means of swimming. At first glance, contingent backup plans may resemble *implementation intentions* (e.g., Gollwitzer, 1999), which are specific goal-related behavioral responses to support means in anticipated situations. However, contingent backup plans wholly replace one's first-choice means, whereas implementation intentions are instead used to continue supporting first choice means. Because of this difference, replacing with contingent backup plans is an intentional process that may be motivationally challenging. Replacing with the above backup plan to go swimming involves allocating additional resources (e.g., buying swim goggles), and if this older adult views the swimming as inferior to hiking, she could decide to disregard the pain in her knees and continue hiking.

Not every backup plan is developed with a specific marker of when it may be beneficial to replace a first-choice plan. Redundant backup plans are instead reserved because they may later prove more useful than one's first choice plan. To compare whether a reserved redundant backup plan is more advantageous than a one's first-choice plan, we argue that redundant backup plans remain activated to various degrees. This activation can distract resources from a first-choice plan, and implies that reserved redundant backup plans can expend one's resources even if they are not being used. Thus, similar to situations where a person is concurrently using multiple means (Kruglanski, Pierro, & Sheveland, 2011), reserving redundant backup plans can decrease one's commitment to the first-choice plan, and invite unnecessary, distracting, and even demotivating deliberations about which means to use. For an example of a redundant backup plan, imagine wanting to take a perfect sunset photograph. Your first-choice plan involves using a zoom lens, but you pack backup lenses in case they might prove better for the conditions. Carrying the additional lenses (reserving) slows your walk to the vantage point, and deliberating about which lens best suits the photograph (replacing) could result in you missing

the perfect moment entirely.

## Understanding the use and usefulness of backup plans: The role of simplicity costs

We posit that in order to understand whether backup plans support or impair goal pursuit, one must compare costs and benefits of pursuing a goal with a backup plan against the nested option of pursuing the same goal with the first-choice plan alone. In other words, do the *potential* benefits of having a backup plan (e.g., being able to efficiently replace a first-choice means) outweigh the *certain* costs of developing, reserving, and replacing with it? We term the difference between the benefit/cost ratio of a single-means approach and the benefit/cost ratio of a backup plan *simplicity costs*. In contrast to opportunity costs, which refer to the value of opportunities forgone after the selection of an alternative goal, simplicity costs are the value lost by forgoing the simplicity of pursuing the goal with a single means.

Simplicity costs change across the course of goal pursuit. For example, the benefits of increased confidence for achieving the goal at its onset ("I'll definitely get this photo because I have all my lenses") might outweigh the costs of developing a backup plan (i.e., packing the lenses). However, later in the goal pursuit, this calculus can shift. Goal achievement may be impaired when deliberating whether or not to take a backup plan out of reserve and use it to replace a first-choice plan. In addition, replacing with a backup plan may be aversive, akin to admitting failure of the first-choice plan.

Changes in simplicity costs across goal pursuit underlie the use and utility of backup plans. We hypothesize that people decide to develop backup plans using a heuristic involving projected simplicity costs. Broadly consistent with expectancy-value models (e.g., Eccles & Wigfield, 2002), we expect that

people tend to develop backup plans if their *projected simplicity costs at the end of the goal pursuit* are within their subjectively-defined acceptable threshold of decreased efficiency for increased likelihood of success. In other words, people make backup plans when they anticipate that the value of their additional investments will “be worth it in the end.”

Using this heuristic can be problematic because people may overlook the simplicity costs incurred during the reserving and replacing processes. For example, our hapless photographer did not account for the delays incurred from carrying a lens-filled bag, nor did he account for the time spent deliberating whether or not to replace with his backup lenses. Given these often-overlooked costs, we hypothesize that a person’s approach to regulating simplicity costs is key for understanding variations in the usefulness of backup plans. On the one hand, accepting too few simplicity costs may result in ineffective backup plans that provide little support in the case of a first-choice plans’ shortcomings. On the other hand, allowing simplicity costs to escalate can undermine the motivation to pursue a goal, or exhaust the resources required to achieve a goal.

## Current and future research involving backup plans

We are currently testing our hypotheses regarding the use and usefulness of backup plans across several studies. Here we briefly describe an ongoing study that tests our hypothesis regarding the basic processes underlying backup plans (the “ball-throwing” study), as well as a soon-to-be-launched study that tests the effect of reserved backup plans on the motivation to pursue physical fitness goals (the “exercise study”). The central premise for these studies, as well as our research program in general, is that backup plans can change the way a person pursues a goal, even if they are not currently or even ever used.

In the ongoing ball-throwing study, we ask participants to throw balls underhanded into a trashcan from a seated position three meters away. There are two conditions. In the control condition, participants only throw ping-pong balls. Participants in the control condition have five practice throws, and then ten “official” throws. In the experimental condition, participants have access to ping-pong *and* tennis balls and decide how many of each ball they throw for the five practice throws, but must begin the “official” throws using ping-pong balls. They may switch balls at any time. For these participants, the tennis balls represent the backup plan. Our hypothesis is that participants in the control condition will have the highest average score, and that participants in the experimental condition will have the lowest average score, given the additional simplicity costs they accrue during the developing (not practicing ping-pong throws enough), reserving (deliberating about which ball is best) and replacing (recalibrating for the heavier tennis ball) processes. We also predict that the average score of the participants in the experimental condition who do not replace with tennis balls should fall somewhere in between these two poles, reflecting the effect of purely psychological simplicity costs.

In the upcoming exercise study, we again have two conditions. Participants in the control condition are provided a YouTube link to a single aerobic workout video, calibrated to their age, and instructed to workout to this video every day for one week. Experimental participants are given the option of three videos, and can “develop” backup plans by watching short clips of each video. In the experimental condition, we instruct participants that if they wish to switch to a backup video, they may only do so after the fourth day of the study. We hypothesize that the participants in the control condition will average a higher number of days exercised. In contrast, we expect participants in the experimental condition to work out less, especially in the days leading up to the fourth day, consistent with the motivational challenges that backup plans can

introduce, as described in our first example of the patient with high cholesterol.

## Summary and Outlook

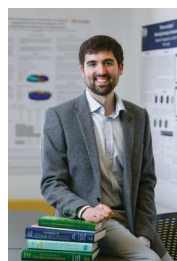
Backup plans are not currently described by existing motivational theories, despite their being a potentially-commonplace self-regulatory approach for managing uncertainty. Promoting efficient backup planning may be particularly important for older adults in the years to come, because as the life expectancy increases across much of the world, older adults may be tasked with self-regulating greater shares of their development (Wrosch & Freund, 2001). Research on aging and health could focus on the role of backup plans for retirement planning, physical fitness, medical messaging, medication compliance, and other related issues.

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University Research Priority Program Dynamics of Healthy Aging, University of Zurich.

This research is supported by the Swiss National Science Foundation Grant 100014-138045 "Readiness to Disengage from Motivational Conflict: Adult Age Differences and Implications for Emotional Experiences" (PI: A. M. Freund) and the Suzanne and Hans Biäsch for Foundation for Applied Psychology Grant 2014/14 "Time for Plan B? Testing for age-related differences in the use, utility, and efficiency of backup plans" (PI: C. M. Napolitano).



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## Note

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